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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,667	03/30/2004	William L. Betts	061607-1451	3575

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EXAMINER	
ABRAHAM, ESAW T	

ART UNIT	PAPER NUMBER
2133	

DATE MAILED: 06/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/812,667	BETTS, WILLIAM L.	
	Examiner	Art Unit	
	Esaw T. Abraham	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☒ Claim(s) *20-22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims **1-22** are presented for examination.

Claim Objections

2. Claims 1, 11, 16 and 19 is objected to because of the following informalities:

a) Please cancel the letter "s" next to the word "and" (see claim 9, line 2).

b) Claims 1, 11 and 16 recite, "A system for data communication" **in the preamble**. CFR § 1.75 states that the specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention or discovery. A system does not indicate what a subject matter the claims are directed to. The suggests that following ---A system for interleaving trellis codes in the data communication system---

c) Claims 6 and 19 recite, "A method for data communication" **in the preamble**. CFR § 1.75 states that the specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention or discovery. A method does not indicate what a subject matter the claims are directed to. The suggests that following ---A method for interleaving trellis codes in the data communication system---

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in

the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Nowhere in the specification does the applicant teach "a trellis state decoder" nor it clear what the Applicant intends by the language.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U. S. C 112

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 7, 8, 12 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 recites the limitation "the magnitude of a transmit signal" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 8, which is dependent of claim 7, is also rejected under 112, second paragraph.

Claim 12 recites the limitation "the magnitude of a transmit signal" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 13, which is dependent of claim 7, is also rejected under 112, second paragraph.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application, which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

5. Claims 1-19, are rejected under the judicially created doctrine of double patenting over U. S. Patent No. 6,715,124 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent. The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows:

As per claim 1:

A system for data communication system comprising a precoder state element configured to monitor a precoder state and to develop a precoder symbols, an interleaver configured to receive and interleave the precoder symbols, a trellis state element configured to receive the interleaved symbols and to develop trellis state output and a trellis encoder configured to receive the trellis state output and to generate redundant bit (see claim 1 paragraphs 4-7 or claim 21 of the patent). The only difference between the claimed system and the system in the patent is that in the later filed case the constellation encoder and a feedback

precoder are omitted compared to claim 1 of the patent. Clearly, applicant is attempting to obtain broader coverage in the claim of the application.

As per claim 2:

The system comprising a feedback precoder configured to maintain the magnitude of a transmit signal at a predefined level is disclosed in claim 1 of the patent (see the third paragraph of claim 1 of the patent).

As per claim 3:

The precoder state defines changes in the transmit signal that occur as a result of feedback percoder actions disclosed in claim 1, paragraphs 3 and 4 of the patent.

As per claim 4:

The interleaver is configured to store the precoder symbols in a first sequence, and the trellis state element is configured to receive the precoder symbols from the interleaver in a second sequence is disclosed in claim 1, paragraphs 5 and 6 of the patent.

As per claim 5:

A constellation encoder configured to receive the redundant bit and at least one data bit and to generate a transmit signal based on the redundant bit and the data bit is disclosed in the claim 1 paragraphs 2 and 7 of the patent.

As per claim 6:

A method of data communication systems comprising producing a series of precoder symbols, interleaving the precoder symbols, producing a trellis state output from the interleaved symbols and generating a redundant bit based upon the trellis state output is disclosed in claims 6, 11 and 26 of the patent. For example in claim 11 of the patent providing (producing)

of series of precoder symbols from the feedback precoder to an interleaver (see paragraph 6 of claim 11), interleaving the precoder symbols (see paragraph 7 of claim 11), producing a trellis state output from the interleaved symbols (see paragraph 7 and 8 of claim 11), redundant bit is added to the plurality of bits and is generated (see paragraph 9 of claim 11). The only difference between the claimed system and the system in the patent is that in the later filed case, developing a transmit in a constellation encoder associated with the transmitter and providing the transmit signal to a feedback precoder are omitted. Clearly, applicant is attempting to obtain broader coverage in the claim of the application.

As per claims 7-9:

A method of maintaining (developing) a transmit signal is disclosed in claim 11, paragraphs 3-5 of the patent.

As per claim 10:

A method of encoding a transmit signal using the redundant bit and at least on data bit is disclosed in claim 11, paragraph 9 of the patent.

As per claim 11:

A system for data communication system comprising means (a precoder) for producing (developing) a series of precoder symbols, means (an inteleaver) for interleaving a precoder symbols, means (trellis state element) for producing a trellis state output from interleave symbols and means (trellis encoder) for generating a redundant bit (see claim 1 paragraphs 4-7 or claim 27 of the patent). The only difference between the claimed system and the system in the patent is the claimed language slightly changed. For example, said "precoder, interleaver, trellis state element and trellis encoder are replaced by the term "means for" which

the applicant is basically referring to the same elements. Further, another difference between the claimed system and the system in the patent of claim 1 is that in the later filed case the constellation encoder and a feedback precoder are omitted and clearly, Applicant is attempting to obtain broader coverage in the claim of the application. Furthermore, claim 27 of the patent used exact term "means for" to refer the claimed elements. In light of the above, it is clear that the claims in the application and the patent are basically the same.

As per claim 12:

The system comprising means (feedback precoder) for maintaining the magnitude of a transmit signal at a predefined level is disclosed in the claim 1 of the patent (see the third paragraph in the claim 1 of the patent).

As per claim 13:

The precoder state defines changes in the transmit signal that occur as a result of feedback percoder actions is disclosed in claim 1, paragraphs 3 and 4 of the patent.

As per claim 14:

Means (interleaver) for storing the precoder symbols in a first sequence, and means (the trellis state element) for receiving the precoder symbols from the interleaver in a second sequence is disclosed in claim 1, paragraphs 5 and 6 of the patent.

As per claim 15:

Means (trellis encoder) for encoding a transmit signal using the redundant bit is disclosed in claim 1 paragraph 7 of the patent.

As per claims 16 and 18:

A system for data communication system comprising a precoder state element configured to monitor a precoder state and to develop a precoder symbols, an interleaver configured to receive and interleave the precoder symbols, a trellis state element configured to receive the interleaved symbols and to develop trellis state output and a trellis encoder configured to receive the trellis state output and to generate redundant bit (see claim 1 paragraphs 4-7 or claim 21 of the patent). The only difference between the claimed system and the system in the patent is that in the later filed case the constellation encoder and a feedback precoder are omitted (comparing to claim 1 of the patent). Clearly, applicant is attempting to obtain broader coverage in the claim of the application.

As per claim 17:

The system comprising a constellation encoder is disclosed in claim 1 paragraph 2 of the patent.

As per claim 19:

A method of interleaving in a data communication system comprising the steps of generating a trellis symbol representing a trellis state of a signal constellation, interleaving a plurality of the trellis symbols, determining the trellis state associated with each of the trellis symbols, and trellis encoding based on the trellis state to produce a redundant bit is disclosed in claims 6, 11 and 26 of the patent. The only difference between the claimed system and the system in the patent is that in the later filed case developing a transmit in a constellation encoder associated with the transmitter and providing the transmit signal to a feedback precoder are omitted. Clearly, applicant is attempting to obtain broader coverage in the claim of the application.

Allowable subject matter

6. Claims **20-22** are objected to as being dependent upon a rejected base claim but would be allowable if rewritten independent from including all of the limitation of the base claim and any intervening claims.

a) The claimed method comprising precoding the first signal constellation to produce a second signal constellation and transmitting the second signal constellation (as in claim 20) which the prior art do not teach or render obvious.

b) The claimed method wherein the interleaving step further comprises receiving the plurality of trellis symbols in a first sequence and producing a second sequence of the plurality of trellis symbols (as in claim 21) which the prior art do not teach or render obvious.

c) The claimed method wherein the determining step further comprises slicing each of the trellis symbols to determine a vector y(n) associated with each of the trellis symbols (as in claim 22) which the prior art do not teach or render obvious.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US PN: 5,878,077 Betts

US PN: 6,141,384 Wittig et al.

8. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Esaw Abraham whose telephone number is (571) 272-3812. The examiner

can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are successful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for after final communications.

Esaw Abraham

Esaw Abraham

Art unit: 2133

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